Technology Integration for Meaningful Classroom Use

Unit Lesson Plan

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| Lesson Title: Spaghetti Towers | | | |
| Grade Level: 9-12 | | Unit: Structures | |
| Goals | | | |
| Content Standards:  *New York State Standards:*   * ELA: 1 Students will read, write, listen, and speak for information and understanding. * MST: 2 Students will access, generate, process, and transfer information using appropriate technologies. * MST: 5 Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environment needs. | | | |
| ISTE NETS-S:  x Creativity and Innovation  x  x Communication and collaboration  x Research and information fluency  x Critical thinking, problem solving, and decision making  Digital citizenship  x Technology operations and concepts  Instructional Objectives:   * Students will work with partners to construct a spaghetti tower that will hold the most weight during test day. Each group will research keywords to help them build the strongest tower possible, using the internet. They will need to design their towers on paper given the limited material and the specifications for this project. Each group will be able to experiment with different structures and shapes to determine which ones are able to handle the greatest amount of load. The winner of the Spaghetti Tower Project will receive a free t-shirt. | | | |
| Action | | | |
| Before-Class Preparation:  Before class begins make sure all the computers are turned on and running properly. Make sure there is enough spaghetti, wood glue, waxed paper, internet access for 30 teams. | | | |
| During Class | | | |
| Time | Instructional Activities | | Materials and Resources |
| 20 Minutes | The project will be introduced with some short clips that I have put together from Windows Movie Maker from students projects in past years. I will then hand a design brief that describes the project and its specifications and limitations. | | Projector, Tower DVD, Design Brief |
| 30 Minutes | After students have been partnered up, they will need to research their project and also include 5-7 facts on the basis of structural integrity and a list of keywords already given to them before hand. | | Internet Access |
| 30 Minutes | Using their prior knowledge of orthographic drawing, students will create a full scale Tower on graph paper and hand it in for a grade. | | Drawing Tools, Graph Paper |
| 90 Minutes | Students will create and assemble a tower out of spaghetti using wood glue. Students will need to finish their tower by the deadline date in order to compete in the competition. Students will need to follow specifications to make sure they qualify for the competition. | | Spaghetti, Wood Glue, String, Exacto Knives |
| 60 Minutes | Prior to testing, students will need to take display pictures of their tower for their online portfolio. Students will test their projects to see how much weight it can withstand. The data will be recorded. | | Weights, platforms recording sheet. |
| Monitor | | | |
| Ongoing Assessment:  Students will need to hand in their drawings in order to start construction on their tower. The teacher will be monitoring their progress. | | | |
| Accommodations and Extensions:  Students that need to be accommodated will be working with a Teacher’s Aide in order to develop authentic learning for this Problem Based Learning Activity. | | | |
| Back-Up Plan:  If students are not able to access internet, students will be given print out sheets of certain structural shapes that could be used in their project. | | | |
| Evaluation | | | |
| Lesson Reflections and Notes:  Students will need to fill out a partner evaluation sheet to assess their partner on their effort and productivity on their project. This will be a part of their final rubric. | | | |